

# Touched And Moved By Arts

## Introduction to a Transdisciplinary Discourse on Human Experience

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### Biography

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**Heidi Fast** is an artist-researcher and singer with MA in live art and performance studies. Fast is currently finalizing her artistic doctoral research on the transformational potential of non-verbal affective communication, in Aalto University. Fast works in a multidisciplinary research project, called "Experiential Demarcation: Multidisciplinary Inquiries into the Affective Foundations of Interaction" (led by J. Taipale, University of Jyväskylä). Her doctoral research is actualized in co-operation with Helsinki University Central Hospital of Psychiatry. The themes of Fast's artistic research are imminently connected with art working, that involves wide projects and series of artworks, such as *Hospital Symphonies* (2015–2019), which was actualized to the hospital space, concert hall and radio.

Dr. **Kirsi Heimonen** is an artist-scholar in the field of artistic research. Her recent research interests have been in the notions of silence, slowness and in-

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Dr. **Riitta Hari** (MD PhD) is Professor Emerita of Systems Neuroscience and Human Brain Imaging at Aalto University, Finland. She and her collaborators have extensively developed and used magnetoencephalography (MEG) to track brain dynamics related to sensory, motor, cognitive, and social functions in both healthy and diseased human individuals. Hari is Academician of Science in Finland since 2010 and International Member of the National Academy of Sciences USA since 2004. She currently attempts to bridge art and neuroscience without privileging either.

## **Abstract**

**Artistic research focuses on experiences that are difficult to grasp conceptually. This article aims at a common transdisciplinary ground for understanding how people are ‘touched and moved’ by arts. Basic neuroscientific principles—predictive processing, interoception, and bodily feelings—appeared useful in discussing artistic research: (1) How pre-existing knowledge affected people’s percepts of each other while they participated in nonverbal vocal art with psychiatric patients, (2) how an author–painter had strong embodied experiences while viewing visual art, and (3) how a well-practised embodied skill, walking, was transformed into an extremely slow-speed performance, intensifying the sensations from the environment and limiting mind-wandering. These artistic experiences demonstrate the usefulness of verbalising rich artis-**

**tic experiences and reveal the tight connection between mental content and motor activity.**

## **Keywords**

**Artistic research and neuroscience, predictive coding, beholder's share, art perception, embodied experience**

## **Background**

We are all embedded in the same physical world, but our notions of the environment, our experiences and how we form knowledge based on them vary. General laws and regularities as a goal in science and shared meanings in artistic research seem like a dialogue in which the partners pass each other by because the world is approached and experienced through different lenses. For example, the roles of sensory and embodied information are discussed quite differently in neuroscience and artistic research, and the lack of common concepts and methods easily leads to misunderstandings.

Artistic research has come into confrontation with natural sciences, with it considered to produce knowledge that science cannot unravel (Hannula et al, 2014; Borgdorff, 2010). As researchers coming from different disciplines in the arts and neuroscience, we are in a position to challenge our parallel epistemological realities by discussing artistic research alongside contemporary neuroscience as regards how people are 'touched and moved' by arts. Here, artistic researchers are more interested in (e.g. aesthetic) experiences, whereas the neuroscientists focus on the brain basis of percepts, actions, and feelings.

Our special interest is related to bodily senses—touch, haptics, position sense (proprioception), and interoception. Whereas neuroscientists have unravelled the neuronal basis of touch,

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artists typically use the term touch in a much wider sense, often metaphorically, considering the arts to bring a person ‘into touch with a reality that precedes any re-presentation in the space of the conceptual’ (Borgdorff, 2010, p. 60). Artistic researchers may contemplate, as discussed below, how shared vocal resonance between people can create social proximity that ‘touches’ the participants, sometimes metaphorically and sometimes in the form of actual bodily experiences, which is more in the focus of this article. Consequently, as our thesis follows, transdisciplinary misunderstandings are frequent because common concepts and methods are missing or not shared. Combining understanding from different disciplines will give a more comprehensive transdisciplinary insight into human experience.

### **Transdisciplinary approaches to artistic research and neuroscience**

Friction and contradictions between disciplines can be productive, triggering novel understanding, as long as the participants know what they are disagreeing about. For successful transdisciplinary collaboration, the parties need to have some overlap in their research interests, vocabularies, and concepts. We do not aim to ‘explain’ artistic phenomena or pieces of arts with neuroscientific knowledge – or vice versa – but rather to complement the world views obtained by either discipline alone, and to acknowledge that different types of knowledge-production co-exist and can be mutually informative. We agree with neuroscientist Anil Seth (2019) that the combination of arts, artistic research, and neuroscience should be federal rather than colonial.

According to immunologist and Nobel laureate Peter Medawar (1969), science is the ‘art of the soluble’. In other words, experienced and skilled scientists avoid too-simple problems as trivial. Medawar also argues that scientists typically avoid too-difficult problems because there might not be reliable solutions in sight. Artistic researchers, instead, often bravely tackle even wicked problems with the aim to ponder, argue, disrupt and catalyse new ideas, rather than to find answers that are replicable and generalisable. Wicked problems, such as understanding

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the human experience or some global challenges, are so complicated and ill-defined that they require ‘convergence research’ (<http://www.convergencerevolution.net/2016-report>), where researchers with different backgrounds and diverse perspectives attack the same problem, trying to integrate their intellectual insights, knowledge, and understanding.

The knowledge produced through artistic research adds value and understanding for others. It also supports similar or related projects in the formation of new knowledge. Through artistic research and the accompanying critical analysis, reflection, or narration, subjective experiences can become commonly shared experiences and a tool for understanding others. Artistic experiences are, as any experiences, always subjective, but they can, and should, be made visible, audible, felt, or experienced in research expositions (e.g. research artworks). Although singular experiences are not necessarily commensurable, they can be commonly criticised and assessed through research expositions (Hannula et al., 2014). However, within research exposition occurs a re-doubling of practice to move from artistic ideas to epistemic claims. Thus, one proposition in a research exposition can include both a thought and its appraisal (Borgdorff & Schwab, 2014, p. 15).

Both scientific and artistic research strive to make changes in current practices in acting in the world, reorganising our ways of moving, hearing, producing, or understanding human behaviour. Artist-researchers may change their artistic method (based on practical and theoretical know-how around a certain cultural practice) into a method of research.

Procedural knowledge generated in artistic research can be transferred to others via nonverbal means, for example by imitation: during crafts practices, master–apprentice type knowledge-production is a significant part of learning. Practice-based research, similar to artistic research, and typically used as a method by designer-researchers, is particularly interested in this kind of method transfer (Groth, 2017; Mäkelä, 2016). Similar knowledge and skill transfer occurs in medical bedside education where a senior physician teaches students various clinical skills,

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such as palpation of the body, or inducing an anaesthetic nerve block. In this type of procedure, praxis increases knowledge and hence modifies and enriches percepts and experiences. Compared with science-based research, artistic research and its constant relation to arts practice operates in the field of aesthetic and lived experiences and is open to alternative and varied outcomes.

Like science, but unlike artistic work, artistic research has to describe itself discursively in relation to other, already existing, practices and discourses (see e.g. Kirkkopelto, 2015). Therefore, many artistic research projects involve verbalisation of the difficult-to-verbalise aesthetic, sensory and embodied experiences of the participants, spectators, informants, and/or artists who are producing a new piece of art/artistic research exposition. To better understand artistic experiences from a neuroscience perspective, and as an example of experience in general, we will first sketch some neuroscience-based concepts that we use in our analysis: the action–perception loop, touch and other body-related senses, and predictive processing.

### **Action–perception loop**

All animals, humans included, are connected to the environment bidirectionally, affecting the world via their motor system and receiving sensory feedback that is compared with the predicted feedback (see Figure 1). These action–perception loops (Hari & Kujala, 2009) are omnipresent and allow active participation with the environment that also includes other people and thereby social interaction. One cannot separate action and perception, which are tightly interwoven with the environment.

### **Touch and proprioception**

Artists, philosophers and scientists have assigned fundamental significance to touch, as it likely exists in all living organisms and can be considered a prototype of sensing and active

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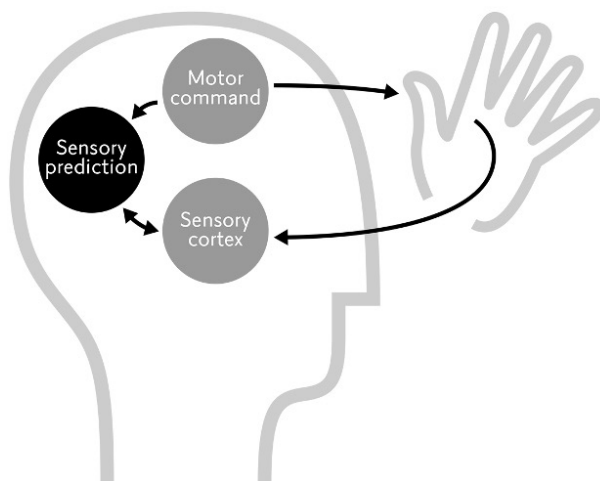


Figure 1. Action–perception loop. Motor commands controlling the person’s movements are associated with predictions of the movements’ sensory outcome. These predictions are compared with the actual sensory input.

exploration of the world. Touch as our most intimate sense is strictly regulated by social norms that dictate which parts of our bodies, and in which ways, we allow other people to touch. The touchable area depends strongly on the social bonds between the individuals and appears culturally universal (Suvilehto et al., 2015, 2019). During the coronavirus pandemic social acts such as shaking hands were rapidly reformulated, but it became even more evident how fundamentally needed touch is.

The neuronal processing of somatosensory input received from the skin, joints, muscles, and the inside of the body is well-established (see textbook by Kandel et al., 2012). Pure touch comprises many submodalities relying on separate peripheral receptors located in the skin. For example, the Pacinian corpuscles are sensitive to pressure fluctuations up to about 300 Hz, thereby being able to contribute to voice-induced audiotactile and vibratory percepts (Schürmann et al., 2004), discussed later in this paper. A caressing touch applied with a slow speed activates specific tactile fibres and can release oxytocin in the brain (Olausson et al., 2002), thereby emphasising the social, and not only protective, function of the skin senses.

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Many tactile sensations are combinations of impulses transferred via several receptor types; think for example of a cold pinch versus a warm strike on your hand.

Active touch (applied on either an object or another person) does not produce just a (passive) tactile sensation but also involves motor action and proprioceptive input from the moving muscles, tendons, and joints. Proprioception specifically informs a person about the position of the body, e.g. of the acting hand. In other words, active exploration is a combination of touch (from skin), proprioception (informing about body position), and motor control, together called haptic processing.

In artistic research, the concept of touch is often used in a very different meaning, for example emphasising the mutuality of touch: when people touch other persons, they allow themselves to be touched at the same time (Merleau-Ponty, 2006; Nancy, 2008). From a neuroscientist's perspective, this 'double touch' looks different because proprioception informs about the agency (who was the actor). Thus, the touching person (the agent) receives different sensory information than the person who passively receives and feels the touch. Moreover, when people touch themselves, the tactile information is suppressed to some extent compared with a situation when a similar touch is provided by another person (Blakemore et al., 1998; Hesse et al., 2010). It is also known that brain-level inhibition keeps track of which of the two hands is being touched, even simultaneously (Hlushchuk & Hari, 2006).

Below we discuss touch in different ways: Sometimes as a haptic process, a combination of proprioception and motor control, and other times as an inner bodily experience, which can easily be confused as a metaphorical idea of touch. Touch as an inner bodily experience is often the kind of 'touch' one encounters with a strong artistic experience.



## **Interoception**

Although the role of the ‘exteroceptive senses’ (vision, hearing, touching, smelling, tasting) is well-established in the context of arts perception and production, ‘interoception’ which includes visceral input, is often ignored. Interoception informs a person about the internal state of the body and is related to body awareness. The interoceptive input comes from various inner organs via a huge number of nerve fibres. Whereas the tactile and proprioceptive fibres reach the brain’s somatosensory cortices (Kandel et al., 2012), the interoceptive afferents mainly reach the hypothalamus (that regulates e.g. body temperature, hunger, thirst, and fatigue) and interoceptive cortex (Damasio & Carvalho, 2013). The majority of interoceptive signalling is unconscious and helps to maintain physiological balance in the body.

The involvement of the body in both emotions and cognition is supported by the subjective reports of bodily feelings that are consistent across people and cultures (Nummenmaa et al., 2014, 2018; Volynets et al., 2020).

## **Predictive processing and the beholder’s share**

A nowadays well-accepted view on human perception is based on predictive processing (Friston et al., 2006), assuming that humans predict future sensory events on the basis of knowledge, ‘priors’, accumulated in the past. The priors (see Figure 2) affect all sensory experiences. This framework includes the idea that the brain reacts strongly to salient sensory stimuli that deviate from those that were predicted. ‘Prediction errors’, the differences between the expectations based on priors and the received sensory input, are minimised continuously at several brain levels by modifying synaptic strengths. Consequently, the perceiver’s surprises decrease and the world becomes more predictable.

Obviously, a tendency to minimise prediction errors would be disastrous as the only driving force, as the optimum solution would be withdrawal into a sensory-deprivation environment

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(Van de Cruys & Wagemans, 2011). Instead, another concurrent drive, curiosity, leads people to search for novelties and experiences, such as tasty food, entrainment, sex, and experiences with arts. Minimisation of prediction errors seems to be rewarding as such, and thus surprise elements offer new possibilities for rewards.

Many priors are culturally shaped, and people with different educations or cultural backgrounds thus view, perceive, and therefore also interpret, things differently. Strong priors can bias percepts, even to the extent that just noise as the sensory input can be interpreted as the expected stimulus, resulting in one seeing ‘ghosts’ where there are none.

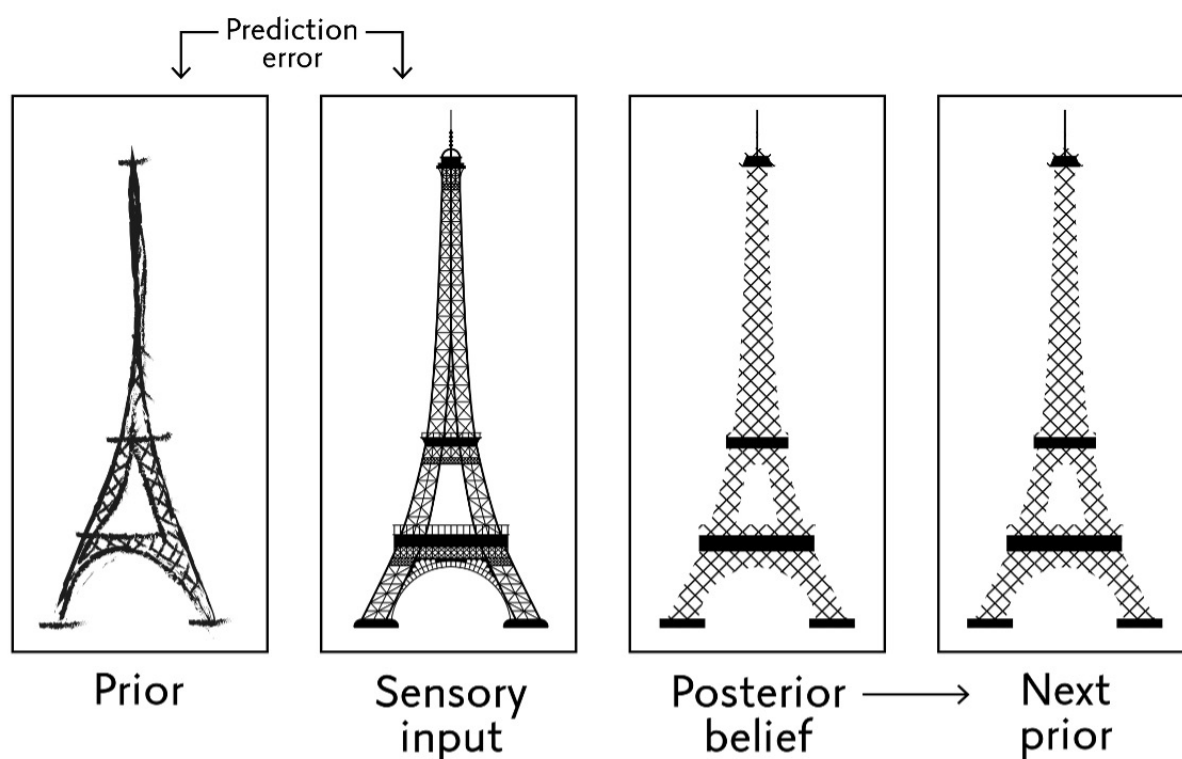


Figure 2. Schematic presentation of predictive coding. The priors improve when new sensory input is accumulated.

Although often presumed to be otherwise, our senses have not evolved to produce as accurate information as possible about the world but rather to provide useful information for guiding

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our actions and movements (Llinás, 2002). During individual development, much behaviour becomes automatic. Habits increase people's efficiency in acting and perceiving but can also stiffen behaviour. For example, one cannot voluntarily shut down the skill of reading.

A fully predictable environment does not require much effort but is boring. The same is true for the arts: predictable art is seldomly interesting. Art that 'touches' is typically somehow surprising and emotion-triggering and, in the predictive-processing sense, rewards those spectators or participants who are able to minimise prediction errors and thereby adapt the artwork to their individual world of experiences. This framework of predictive processing is very similar to the concept of beholder's involvement or beholder's share, first proposed by the Austrian art historians Alois Riegl and Erns Gombrich (for a review, see Kandel, 2016), stating that no experience of artwork is complete without the beholder's sensory and emotional involvement. This complementation of sensory input by prior knowledge works naturally for any percept, as we humans use the same body and the same senses for perceiving arts and the world in general.

### **Experiences in and through arts practice**

The arts can be understood as system reflective of human behaviour and culture. Arts underline, disturb, or make interventions.

The following three examples unfold arts-related embodied experiences from various angles. The first example, based on artistic research on *Nonverbal vocal art*, highlights how interoceptive and interactive experiences of shared vocalising and listening interfere with pre-existing understandings of the psychiatric patient's capabilities and vitality. The second example, *Taken away by expressionist paintings*, describes how arts can *touch* and *move* a spectator. The third example, *Slow walking*, shows how an unconventional way of moving breaks down established behavioural routines and leads to new ways of perceiving the world.

**Example 1: Nonverbal vocal art**

Nonverbal vocal art is an artistic research project that has already resulted in a series of participatory vocal installations, called Hospital Symphonies (Fast, 2018, 2019), including patients of a psychiatric hospital (Helsinki University Central Hospital, Department of Psychiatry, Finland), staff, relatives, and visitors (see Figure 3).

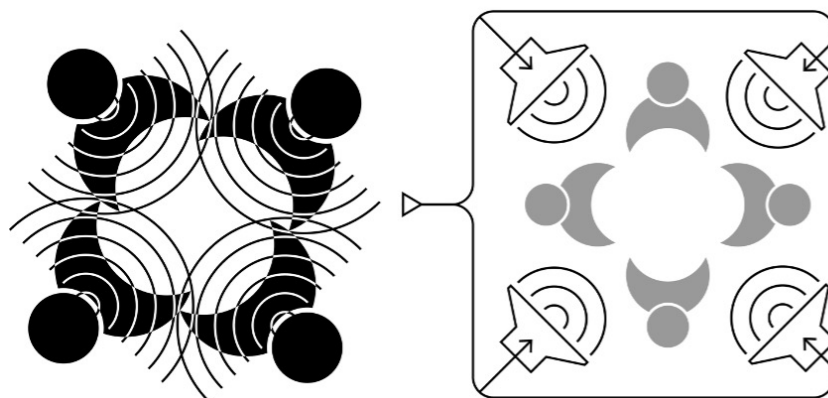


Figure 3. Setting for the Nonverbal vocal art practice and the resulting installation. Participants produced vocal atmospheres together that surround the listeners in the installation setting.

Voices are equally as characteristic of persons as faces. The voice contains information about the vitality, cultural background, gender, emotional state, and hesitation of the person, and it can be recognised even when the person is not present (for example, during a telephone conversation).

The human voice is produced by pushing air through articulation pathways, including the vocal cords, in a highly controlled manner. People regulate their voice production on the basis of proprioceptive feedback from the articulation muscles and acoustic feedback from both inside and outside the body.

In the *Nonverbal vocal art* practice, the participants actively used their voices together, attending to how one's own voice and others' voices are felt as bodily vibrations. For example, the participants laid on the floor so that they could clearly feel the voice-related vibrations in their

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bodies (see Figure 3). The voices reached other individuals as sound waves via their ears but the low-frequency fundamental frequencies (of 100–200 Hz) of the voice also induced mechanical vibrations that were felt via the floor, furniture, or other person(s). As in chorus singing, the participants of Nonverbal vocal art were able to adjust their own voice (pitch, volume, timing) according to the feedback from their own and others' voices, thereby tuning into others' rhythm, intensity, or tone of voice. In the resulting 'affective attunement', emotional experiences were shared and sensed beyond verbal communication, as well as being heard from the recordings of the mutual vocalisations.

According to the basic principles of predictive processing and beholder's share, the sensory and affective experience triggered by the nonverbal artistic activity, and the significance it might bear, is not set until the listeners finalise their experience with their interpretations based on their earlier experiences. *Vocal Nest*, the first artwork of the Hospital Symphonies series, was actualised as a vocal installation in the central corridor of the Psychiatric Centrum of Helsinki University Hospital in 2015. The mutual, haunting voice triggered the listeners to echo the patients' voices with their own bodily feelings (see Figure 3). The nonverbal soundscape which, according to some listeners, went into their 'bones and marrows', disrupted the normal and very basic everyday activity of verbal interaction and showed the hospital environment in a new light: the listeners of the artwork were not able to discern which voices belonged to those who were labelled disabled and those who were not. The participatory aspect blurred the boundaries between the artist, the participants, and the audience as the voice was formed and shared in interaction with others.

Some listeners found the artwork difficult to tolerate. For example, some staff members of the hospital experienced the sighing and humming voices as uncanny, or even 'horrible'. Still many patients, and also other listeners, experienced the mutual vocalising as comforting or beautiful. In these interpretations, the vocalising tended to arouse shared meanings and

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new kinds of interaction amongst different actors of the hospital. The participants experienced connection with each other and felt that they were heard in a new way.

This artistic research on *Nonverbal vocal* art highlighted how pre-existing knowledge, background, and routines affect how listeners perceive and interpret each other. The participatory vocalising often turned out to be quite emotional for both parties (Fast, 2018). Although mutual vocalising is in many ways similar to verbal communication, it can produce strong interoceptive experiences that might have particular significance in psychiatric health care, supporting the connection between people in situations where verbal communication is not feasible.

### **Example 2: Taken away by expressionist paintings**

Arts theories and arts research frequently consider a piece of art to become meaningful only through spectators' involvement, encountering, and interpretation (Carrier, 1986; Jacquette, 2014), which resonates with the concept of beholder's share discussed above. For example, curator Achim Borchardt-Hume, describing Mark Rothko's work, contemplates that the paintings are incomplete if one of the three is missing: the painter, the painting as an object, or the viewer, who was always in Rothko's mind when he was painting (Tate Modern, 2019). While the beholder's share can be considered to be involved in any sensory experience, it becomes particularly noteworthy within arts encounters, perhaps because people might already be prepared for surprising elements and new meanings in the arts context. The viewers, with their own history and perceptual and emotional experiences, and with all their expectations, will try to solve the ambiguity in the artwork and complete it for their own purposes.

Visual arts can arouse embodied experiences, very similarly to embodied arts actions, such as walking, described below, or dance, or other performative arts which invite participants, and even spectators, to experience arts through body and sensory experiences. Some paintings, for example, contain such strong tracks of bodily actions that the viewers are tempted to mentally

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recreate the arts production process (Freedberg & Gallese, 2007). What follows is a narration of the singular experience by one of this article's authors, an experienced painter herself.

The experience of losing the sense of time and place, and being emotionally surprised/shocked?? and overwhelmed by art in a way that comes close to the famous Stendhal syndrome caused by cultural overload (Palacios-Sánchez et al., 2017), is familiar to me from making art, and particularly through painting and video-art practice. But as a perceiver, and as a professional art spectator, such an overload seldom happens to me. Mark Rothko is a somewhat clichéd example, and many have written about the spectators' reactions in front of his paintings (see e.g. Christensen, 2017). Rothko's paintings are described to have outstanding significance, even transcendent power, that creates overwhelming emotions (Jain, 2017). But, as clichéd as it might be, it was Rothko whose late classical paintings made me also experience losing the sense of time and place.

Rothko's exhibition was a retrospective at the Tate Modern, London (26 Sep 2008 – 1 Feb 2009), displaying his late work from 1958 to 1970. It was organised in large semi-dark rooms with seats where people could repose, take their time and concentrate their gaze, meditate and be mesmerised in front of the iconic paintings. I was also mesmerised. There was something deeply affective in those large layers of paint with subtle changes of colour tones. I got absorbed by the surface and depth of the paint, and the different layers touched me holistically (my comprehension, sensations, and emotions), allowing me to become fully immersed in the paintings. I felt that I was living through the spatial dimensions of the paint layers, and the experience was deeply embodied, even though I was only looking at the paintings, not moving in front of them. I believe that having the experience of painting myself, knowing what it feels like to spread paint on a surface, was connected to this strong

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embodied experience. Moreover, the large size of the artworks, with canvases larger than my body, made the embodied experience all-embracing.

Encountering a painting as a practice of artistic research can be explored as a part of the knowledge-production of how we perceive the world through our bodies and minds. Accordingly, for Mark Rothko, ‘a painting is not a picture of an experience; it is an experience’ (Seiberling, 2013). Both making and perceiving a painting provide opportunities to learn about subjective experiences through research in and through arts practice.

Interestingly, art-elicited changes in interoceptive signalling (and in the associated emotions) can shape visual percepts (Azzalini et al., 2019), meaning that interoception and the associated bodily feelings can affect exteroception, and vice versa.

### **Example 3: Slow walking**

Moving allows people to receive information from the world via active sensing during each step, standing, sitting, or lying. One of the writers of this article, with a background in choreography and somatic movement practices, challenged her previous ways of moving by embarking on artistic research into *Slow walking* in public outdoor and indoor sites (Heimonen, 2016). Some fragments of the exploration follow (see Figure 4).

In the beginning, I needed to adjust my body to the task of slow walking by standing still and being attentive to small movements as well as to sensations from the body and the events around. Extremely tiny movements captured attention that felt odd, since I could not surrender to the continuous flow of movement or take refuge in skilful movements. After three months of intense standing practice, about half an hour every second day, I was ready to walk slowly. Yet I realised that standing would be (more than) enough for finding new insights. In walking that lacks



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advancing, each change of weight from one foot to another becomes a unique question of how to exist and how to align oneself with the world. It felt as if I was hovering in between an abyss of nothingness and landing on ground that appeared as non-ground, and from which eventually the foot somehow sprang again. Repetition without repetition. As if nothing special happened, yet this act seemed to include all possible movements I had lived, and they were intensified in perceiving. I slow-walked about 24 metres per hour during journeys lasting maximally 2.5 hours. With this speed, a 100-metre distance that the fastest athletes of the world run in less than 10 seconds took for me about 4 hours. Through months of the walking practice, the slowness started to create a gap from my previous way of moving and perceiving, and the separation from the speed and velocity of others around become evident. I also felt that the extreme slowness of moving intensified my attention. I was overwhelmed by the abundance of sensations that poured onto and through the body: the environment with its colours, textures, smells, rhythms, sounds, shades, wind and passers-by. After a two-hour practice, the vastness of perceiving both the body and the environment in that apparently simple act often resulted in dizziness, and I was forced to stop due to exhaustion, pain or, in wintertime, coldness. During slow walking, I was faced by my previous habits and ways of thinking. My normal mind-wandering disappeared totally, while the sensations from the environment were much intensified during the effort-demanding slow walking.

After several months of roughly three walking journeys a week, I felt lost and disoriented, and I was wondering how simple I dared to still be. In the act of slow walking, which was about waiting without waiting, breathing each instant, being thrown into a timeless mode, and feeling how the contours of my body became

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porous, the borders of the known I began to disappear; I felt myself to be nothing. This nothingness, the feeling of spaces in the body and the environment around, required openness and vulnerability, yet without any personal constraints. The pull of desire between holding and losing myself created a state of in-between-ness during each step, as the self-contained subject started disappearing. The exhaustion of the body supported surrendering to the unknown and loosening the constraints of the known I. Perhaps just then the alignment of my body was most clear and simple, and the silence of the body appeared along with the breath that travelled easily in and through the body.

One likely explanation for these changed bodily feelings is the purposeful disruption of an extremely well-developed and long-practised habit of walking, so that effort had to be paid to the performance itself, with increased awareness of the body. Consequently, proprioceptive and interoceptive signalling reached the consciousness much better than during normal walking routines, and the walker also became more sensitive to the environment. In other words, despite the great effort involved in the walking process itself, the awareness of the environment was intensified. In contrast, mind-wandering that normally occurs for about 50% of the time during rest or any monotonous motor activity, such as normal walking or driving, disappeared as though the slow walking had captured all the thinking resources. Altogether, *Slow walking* was a source of a rich and embodied experience of both the self and the environment, creating new knowledge of the world and its perceiver. The performance therefore resembled the primordial forms of motion before habituation to the environment, when the only goal of the movement was to find food and other life-sustaining things and to escape danger.



Figure 4 and 5. Slow walking. *Left*: The performer in the middle of normally walking people. *Right*: The walker moving slowly in a winter scene?? Image credits: Reetta Wikström-Tuominen

## Conclusions

The above three examples give form to multiple different approaches that can become part of knowledge-production when ‘thinking in, through and with art’ (Borgdorff, 2010, p. 44). We make the following conclusions:

First, previous experiences (here with an arts practice) deepen the sensory experiences and sensitise the person to deviations from the expected sensory input. The arts encounter thus becomes much more rewarding than to laypersons to whom the whole object or artwork is incomprehensible. We consider this phenomenon to emphasise the importance of the beholder’s share (parallel to predictive processing), associated with interoception-related bodily feelings that shape the ‘touching and moving’ experiences elicited by the arts.

Second, encountering arts involves multiple levels, ways, and intensities of mental and bodily processing. Arts experience, although always individual, often becomes more meaningful when shared with others. The interaction that happens with the artist and the production (solo or collaborative) can also be transferred to a spectator.

Third, disrupting purposefully everyday practices, routines and habits – as in the *Slow walking* example – breaks learned and safe behaviours and turns the practice towards encountering

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self and the environment in unexpected ways, just as it is possible as an act of art. The disappearance of mind-wandering combined with intensified perception of the world informs us about the tight connection between mental content and motor action. Similarly, the *Nonverbal vocal art* example broke through the customary language-based interaction of the psychiatric hospital, the rhythms of its everyday order and its spatial structure, by ‘forcing’ employees to encounter patients’ existence through a nonverbal and sometimes unpleasant and awkward manner.

This paper, based on our first, but laborious and time-consuming, steps to establish smooth communication and collaboration between artistic research and neuroscience, will hopefully lead the reader to ponder the possibilities and challenges of further transdisciplinary collaboration, or even convergence research, where researchers of diverse background join forces to tackle a common problem.

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